INFORMATION ONLY

ROCKY FLATS ENVIRONMENTAL

TECHNOLOGY SITE **EMD OPERATING**

PROCEDURES MANUAL

VOLUME III: GEOTECHNICAL

Manual No.:

5-21000-OPS-GT

Procedure No.: Table of Contents, Rev 61 LSB

Page:

1 of 3

Effective Date:

12/22/94

Organization: Environmental Management

THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:

VOLUME I: FIELD OPERATIONS (FO) VOLUME II: GROUNDWATER (GW) VOLUME III: GEOTECHNICAL (GT) VOLUME IV: SURFACE WATER (SW) VOLUME V: ECOLOGY (EE) VOLUME VI: AIR (AP)

Procedure <u>No.</u>	<u>Title</u>	Rev. <u>No.</u>	Effective <u>Date</u>
GT.01	Logging Alluvial and Bedrock Material	2	05/12/92
94-DMR-001007	LIMITED SCOPE - Section GT.01 Text and Form GT.1A Modification	2	06/01/94
GT.02	Drilling and Sampling Using Hollow Stem Auger Techniques	2	05/12/92
93-DMR-000955	Form GT.2A Modification	2	01/10/94
93-DMR-000960	QC Sample Collection Modification	2	01/10/94
94-DMR-000382	Approval Process and Sampling Collection Modification	2	03/28/94
94-DMR-000405	Sample Liner Taping Changes	2	03/28/94
94-DMR-000995	LIMITED SCOPE - Section GT.02 Text Modification	2	06/01/94
GT.03	Isolating Bedrock from Alluvium with Grouted Surface		
	Casing	2	05/12/92
93-DMR-000956	Form GT.3A Modification	2	01/10/94
94-DMR-000418	Advanced Notification to the State of Colorado	2	04/22/94
GT.04	Rotary Drilling and Rock Coring	2	05/12/92
93-DMR-000957	FORM GT.4A Modification	2	01/10/94
94-DMR-000419	Advanced Notification to the State of Colorado	2	04/22/94
94-DMR-000935	Procedure Modification to Allow Sonic Drilling Technique Usage	2	06/01/94
GT.05	Plugging and Abandonment of Boreholes	2	05/12/92
93-DMR-000961	Form GT.5A Modification	2	01/10/94

DOCUMENT CLASSIFICATION REVIEW WAIVER PER R.B. HOFFMAN, CLASSIFICATION OFFICE JUNE 11, 1991

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE EMD OPERATING PROCEDURES MANUAL VOLUME III: GEOTECHNICAL

Manual No.: 5-21000-OPS-GT
Procedure No.:Table of Contents, Rev 61 LSB
Page: 2 of 3
Effective Date: 12/22/94
Organization: Environmental Management

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Procedure <u>No.</u>	<u>Title</u>	Rev. <u>No.</u>	Effective <u>Date</u>
GT.06	Monitoring Wells and Piezometer Installation	2	05/12/92
94-DMR-000801 94-DMR-000994 94-DMR-002107	CO Regulatory Statute Reference Citations and Text Modification LIMITED SCOPE - Section 6 Text Modification TEMPORARY LIMITED SCOPE - IHSS 110 Screen	2 2	06/01/94 06/01/94
-0.4 DMD 000240	Modifications EXPIRES 12/23/94 LIMITED SCOPE - Installation of Mini Wells	2	11/09/94
•94-DMR-002349	LIMITED SCOPE - Installation of Mini Wells	2	12/22/94
GT.07	Logging & Sampling of Test Pits and Trenches	2	05/12/92
94-DMR-000276	Section GT.07 and form Modifications	2	02/28/94
GT.08	4-E42-ER-OPS-GT.08 - Surface Soil Sampling	3	01/25/94
94-DMR-000133	Sampling Modifications	3	02/04/94
94-DMR-000229 94-DMR-000857	Editorial Correction GT.08 LIMITED SCOPE - Expansion of Scope of	3	03/14/94
94-DIMIN-000637	94-DMR-000133	3	07/19/94
GT.09	Soil Gas Sampling and Field Analysis	2	05/12/92
94-DMR-000431	Calibration Occurrence Clarification	2	04/11/94
94-DMR-001521	Clarification of Soil Gas Procedures	2	09/02/94
94-DMR-002036	TEMPORARY LIMITED SCOPE - Interagency Agreemed Air Volocity Measurement Required 2	ent	
	EXPIRES 11/23/94	2	10/26/94
GT.10	Borehole Clearing	2	05/12/92
GT.11	Plugging and Abandonment of Wells	2	05/12/92
93-DMR-000962	Form GT.11A Modification	2	01/10/94
94-DMR-000561	Section 11 Modification	2	05/06/94
GT.15	Geophysical Borehole Logging	2	05/12/92
GT.17	Land Surveying	2	05/12/92
94-DMR-000560	Text Modification	2	05/06/94

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE EMD OPERATING PROCEDURES MANUAL VOLUME III: GEOTECHNICAL Manual No.: 5-21000-OPS-GT
Procedure No.:Table of Contents, Rev 61 LSB
Page: 3 of 3
Effective Date: 12/22/94
Organization: Environmental Management

Procedure No.	<u>Title</u>	Rev. <u>No.</u>	Effective <u>Date</u>
GT.18	Surface Geophysical Surveys	2	05/12/92
94-DMR-001997	LIMITED SCOPE - Seismic Refraction Surveys at OU4 for Phase II activities	2	10/27/94
GT.19	Field Gas Chromatographs	2	05/12/92
GT.20	Procedures for Soil Interstitial Water Sampling and Sampler Installation	2	05/12/92
94-DMR-000297	Section GT.20 and form Modifications	2	02/28/94
GT.21	Cone Penetrometer Testing	1	05/12/92
GT.24	Approval Process for Construction Activities on or Near Individual Hazardous Substance Sites (IHSSs)	0	05/12/92

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372 P02

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372 P04

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Refer to 1-A01-PFG-001 for Processing Instructions.

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EG&G ROCKY FLATS PLANT EMD MANUAL OPERATION SOP Category 2		Manual: Procedure No.: Page:	5-21000-OPS GT.6, Rev. 2 1A of 18
		Effective Date: Organization:	Environmental Management
LIST OF FIGURES			
FIGURE GT.6-1		AGRAM OF ALLUVIA	
FIGURE GT.6-2		TION	
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FIGURE GT.6-3		AGRAM OF WELL FEA	
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FIGURE GT.6-4	SCHEMATIC RI	SER CONSTRUCTION	DIAGRAM 15B

LIST OF EFFECTIVE PAGES

<u>Pages</u>	Effective Date	Change Number	<u>Status</u>
1-5, 7-18	06/01/94	94-DMR-000801	
Form GT.6A	06/01/94	94-DMR-000801	
Form GT.6B	06/01/94	94-DMR-000801	
7	05/11/93	DCN 93.09	
9	09/23/93	DCN 93.06	
10	03/17/93	DCN 93.07	
13	02/10/93	DCN 93.04	
15	02/10/93	DCN 93.04	
15, 15C	02/10/93	DCN 93.05	
15, 15B, 15C	09/02/93	DCN 93.12	EXPIRED
15A	10/01/93	DCN 93.14	
15C	10/01/93	DCN 93.14	
15D-16	01/29/93	DCN 93.02	
15D-16A	/ / 94	94-DMR-0	

TOTAL NUMBER OF PAGES: 27 (including forms)

EG&G ROCKY FLATS PLANT EMD MANUAL OPERATION SOP

Manual: Procedure No.: Page: 5-21000-OPS GT.6, Rev. 2 15D of 18

Category 2

Effective Date: Organization:

Environmental Management

6.4 WELL POINT/MINI-WELL INSTALLATION

This Section describes the procedures used for installing well points. Before installation, sites will be located, numbered, and identified using stakes (or paint sticks on paved surfaces). Refer to SOP GT.10, Borehole Clearing, for more information regarding clearing the sites of underground obstructions.

6.4.1 Well Point Installation

After test sites have been located and cleared, an exclusion zone will be established according to the project Health and Safety Plan. The procedure for installing well points at a specific location is as follows:

- 1. Decontaminate the rig and downhole equipment. See SOP FO.3, General Equipment Decontamination for specific details regarding decontamination.
- 2. Set up the rig to obtain a thrust direction as close to vertical as possible.
- 3. Advance threaded expendable point by either hydraulically pushing or hammering to desired depth.
- 4. At locations within an IHSS, monitor the breathing zone near the rig for volatile organic compounds.
- 5. Insert the end of the hand-perforated tubing (Polyethylene or Teflon) with a threaded stud attached into the probe rods. Thread this into the expendable drive point. Length of perforated tubing will range between one and five feet based upon magnitude of anticipated water level fluctuations.
- 6. Hydraulically withdraw probe rods from hole.

EG&G ROCKY FLATS PLANT EMD MANUAL OPERATION SOP

Manual: Procedure No.: Page: 5-21000-OPS GT.6, Rev. 2 16 of 18

Category 2

Effective Date: Organization:

Environmental Management

- 7. Place 10/20 silica sand filter pack to approximately six inches above the top of the screen while keeping tension on the tubing. Place at least six inches of granular bentonite seal above filter pack.
- 8. Install four-inch long, one-inch diameter PVC casing with threaded or slip cap as protective well-point surface casing. Protective casing will be nearly flush with the ground surface.
- 9. Install four-foot long, three inch diameter steel post adjacent to protective casing to act as marker and traffic barrier. Post should be installed such that three feet are above ground.
- 10. Develop well point with peristaltic or inertia pump. Since these well points are only for measuring water levels, it is not necessary to measure all the parameters referenced in SOP GW.4, Well Development.
- 11. Survey top protection casing because well-point tubing is too flexible. Refer to SOP GT.17, Land Surveying, for more information regarding site surveying procedures.

6.4.2. Mini-Well Installation

- 1. Decontaminate the rig and downhole equipment. See SOP FO.3, General Equipment Decontamination for specific details regarding decontamination.
- 2. Set up the rig to obtain a thrust direction as close to vertical as possible.
- 3. Advance a Kansas Sampler, hydraulically installing a 1-3/8-inch diameter borehole in accordance with SOP GT.2, Drilling and Sampling Using Hollow-Stem Auger Techniques.

EG&G ROCKY FLATS PLANT EMD MANUAL OPERATION SOP

Manual: Procedure No.: Page: Effective Date: 5-21000-OPS GT.6, Rev. 2 16A of 18

Category 2

Organization:

Environmental Management

- 4. Lower 0.5-inch inner-diameter, factory slotted (0.01) PVC screen and PVC flush threaded casing into borehole. Advance well to total depth of borehole, or backfill bottom of borehole with Pure Gold bentonite pellets so that the desired interval is properly screened.
- 5. Place 10/20 or 16-40 silica sand filter pack to approximately six-inches to two feet above the top of the screen.
- 6. Place a minimum of six inches of Pure Gold pellets above filter pack to seal the well.
- 7. Install a 12-inch diameter concrete pad at ground surface surrounding the miniwell.
- 8. Install a four-foot-long, steel post adjacent to the mini-well to act as a marker. Post should be installed such that three feet are above ground.

7.0 DOCUMENTATION

Provide the WIN form to the Geosciences Division as instructed in 5.1.1. Submit copies of applicable (Sections 5.1.6 and 8.0) records related to this administrative procedure to Geosciences Division.

The installation of monitoring wells and piezometers will be documented on groundwater monitoring well and piezometer report forms. Drilling information will be documented on the Rocky Flats Plant Borehole Log form (Form GT.1A) and on the Hollow-Stem Auger Drilling form (Form GT.2A), or on the Rotary/Core Drilling form (Form GT.4A). Besides the drilling and